



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/772,752

02/05/2004

Marc O. Woontner

14460

5715

7590

06/22/2009

Maria Eliseeva  
Suite 4  
4 Militia Drive  
Lexington, MA 02421

EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

MAIL DATE

DELIVERY MODE

06/22/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,752	WOONTNER, MARC O.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

Art Unit: 2872

**DETAILED ACTION**

1. In view of the administrative remand to examiner from the board filed on April 23, 2009, PROSECUTION IS HEREBY REOPENED. The newly introduced rejections of the claims are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Stephone B. Allen/

Supervisory Patent Examiner, Art Unit 2872

Art Unit: 2872

***Remark***

- This Office Action is only in response to the Appeal Board's administrative remand filed April 23, 2009, in concerning clarifying the issues of “objection to the claims”. The amendment filed after the final rejection, submitted on April 13, 2006, which introduces new features and matters to the claims therefore have **not** been entered.
- This Office Action is therefore response to the amendment filed on November 18, 2005, which has been entered into the file.
- **Claims 7-10 and 12-14 are withdrawn** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 9, 2005.
- Claims 1-6, 11 and 15 remain pending in this application.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1-6, 11 and 15 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1). The amended phrase “holographically and optically variably configured to diffract incoming light” recited in amended claims 1-3 and 11 are confusing and indefinite since it is not clear what is considered to be “holographically configured and optically variably configured”. Does this mean that each panel is a hologram or contains a hologram for diffracting the incident light? Please specify. Since the claims are drawn to an article, a more positive identification not product-by-process type of language is needed for being considered. A method step in an article claim does not give palatable weight and does not remedy the claim from *lacking the essential structure recitation*.

Art Unit: 2872

(2). The amended phrase “each of angles ... is assigned a number” recited in the amended claim 5 is really confusing since this assigning “step” does not adds any structural limitation to an article claim. The scopes of the claim therefore are not determined. This phrase at this juncture really means *an arbitrary assignment* a number to each of the angles. Please specify what is the definite limitations being sought for patent here.

(3) **The amended phrase “YMCK”** recited in claims 1 and 11 is confusing and indefinite since it is not clear what does this phrase stand for? If “YMCK” stands for “yellow-magenta-cyan-black” then **claim 6 is objected** to for it **does not further limiting** the claim. But if it does not stand for such, then please specify what does it stand for? At this juncture it is being examined as “yellow-magenta-cyan-black”.

(4). **Claim 15 has been amended** to include the feature of “a plurality of *multi-layer* holographic pixels” that is very confusing since there is *no specific structural description* for this “multi-layer” structure. The term “multi-layer” therefore cannot be fully examined. Furthermore, it is not clear what is considered to be the “*a multi-layer images forming material*” in the **amended phrase**. The scopes of the claims therefore are not clear. The applicant is also respectfully reminded that the **product-by-process limitation** of the claim is **not given** any patentable weight if it does not distinguish the final product from prior art reference.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

**5. Claims 1-3, 5-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).**

**Rice** teaches a multi-layer *structure* for forming an *image*, (please see Figures 1, 7, and 14 and columns 8-9) that is comprised of an *embossed layer* (55, in Figures 8-11, 115, in Figure 16, or 146, in Figure 18) and a *printing stock*. The printing stock (22) as shown in Figures 1 and 14, comprises a *surface layer* (23) and a *stock* (22), wherein the *stock* (22) serves as the *substrate*. The structure further comprises a *plurality of pixels or panels* (51, Figure 7 or 152, Figure 19, column 14, lines 49-52) that is embossed with *different* diffraction gratings (56, the designations of “8“, “9“ and “10“ in Figure 7 referred to *different* embossed diffraction gratings as shown in Figures 8, 9 and 10), respectively, wherein each of the diffraction gratings is capable of diffracting and reflecting one of the primary colors, (please see column 8, lines 49-63). The plurality of panels is *tinted* with ink (54), wherein the ink may include one of the primary colors (please see column 7, lines 45-50).

As shown in Figure 7, **Rice** teaches the diffraction gratings embossed on the embossable layer are capable of diffracting and reflecting red, blue or green colors. By arranging the individual diffraction gratings in certain combination, Rice further teaches that additive effect can be achieved so that by arranging different combinations of the embossed diffraction gratings in a *pixel* or panel, for instance with equal sized ink dots (55) embossed to separately diffract blue and red color would reflect the color magenta, (please see column 9, lines 30-43). **Rice** also teaches that the ink (54) is applied to the printing plate (31) to create half-tone images, which become the composite image (48), where the ink may include various color such as yellow, magenta and cyan, (please see column 5, line 30-40). The ink (54) is then pressed onto surface layer (23) of the printing stock (22, Figure 1) together with the embossed layer, that is comprised of the embossed diffraction gratings, to form the plurality of pixels or panels.

This reference has met all the limitations of the claims. With regard to the feature concerning each individual panel is *holographically* and *optically variable* configured to diffract incoming light at a

Art Unit: 2872

predetermined reflection angle, **Rice** teaches *explicitly* that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographic method, (please see column 10, lines 21-40). This means that the diffraction gratings are *holographically* configured. The diffraction gratings are *implicitly optically variable* since a spectra of light can be produced by a diffraction grating and can be viewed at a specific range of angles, (please see column 8, lines 49-54). But this reference does not teach *explicitly* that the *individual* panel diffracts and reflects the incoming light at a different angle. However Rice does teach *explicitly* that according to the **diffraction theory** a diffraction grating inherently diffracts and reflects incoming light into *beams* of spectra, which means different color of light will be diffracted and observed at a *different angle range*. Rice further teaches that the angle of diffraction and reflection of the incoming light for the diffraction grating is *determined* by the grating structures such as the *itches* and *orientations* of the grating grooves, (please see column 8 line 59 to column 9, line 18). It would then having been obvious to one skilled in the art, if this is not already of the case for the structure of Rice, to design and make the individual panel to diffract *different* color of light and to have the diffraction angle and therefore the reflection angle *differed* from other panels for the benefit of allowing different color effect and decorative appearance be observed at different viewing angle.

With regard to claim 3, the ink dots embossed with the same diffraction grating can be grouped together as the “panel” referred in claim 3.

With regard to claim 5, one can certainly arbitrarily assign a number to different angles of diffraction for the panels.

The same reasons of rejection above are applied to claim 11.

**6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of patent issued to Mallik et al (PN. 5,085,514).**

Art Unit: 2872

The multi-layer structure for forming an image taught by **Rice** as described for claim 1 above has met all the limitations of the claim. This reference however does not teach explicitly to include the claimed layers. **Mallik** et al in the same field of endeavor teaches a layer structure for making replication of embossed microstructure wherein the layer structure include a web (111, Figure 11) serves as the thermal stable layer, a strip coating (197) serves as the wear resistant layer, an embossable layer (199) with embossed microstructure, a reflective layer (201) for overlaying the embossable layer and an adhesive layer (203) which is heat activated to adhere the multi-layer structure to a substrate (205, Figure 12, please see column lines 23-40). It would then have been obvious to one skilled in the art to apply the teachings of the layer structure of **Mallik** et al to modify the multi-layer structure of **Rice** to provide wear-resistant protection as well as adhesive means to make the multi-layer structure with image formed easily attached to desired substrate agent.

**7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).**

**Rice** teaches a *multi-layer material* or *structure* for forming an *image*, (please see Figure 7, columns 8-9) that is comprised of a plurality of *ink dots* (55, Figure 7), serves as the *pixels*, each dot is being embossed with a *diffraction grating* (56) that is capable of diffracting and reflecting incoming light in a *predetermined* diffraction angle, (please see Figure 7, columns 8-9). **Rice** teaches that the ink dots comprise ink (54) that includes one of the primary colors, (please see column 7, lines 45-50). **Rice** teaches that the ink dots having the embossed diffraction grating are applied to a printing stock (22, Figures 1, and 8-10), wherein the printing stock comprises a *surface layer* (23) and a stock (22), wherein the stock (22) serves as the substrate.

**Rice** teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by *holographic* method, (please see column 10, lines 21-40).



Art Unit: 2872

This means that the diffraction gratings are *holographically configured*. The diffraction gratings are implicitly optically variable since different diffraction effects can be viewed from different ranges of angles of viewing, (please see column 8, lines 49-54). Rice further teaches explicitly that based on the specific groove arrangement and configuration of the diffraction grating that each of the diffraction gratings (56) can be designed to diffract light in at a specific angle range, (please see column 8, lines 54-63).

With regard to the feature concerning “multi-layer holographic pixels”, it is noted that the limitation “multi-layer” limitation is not explicitly stated in the claim. It can only be examined in the broadest interpretation. Rice teaches that the diffraction gratings formed on the ink dots (55) has a multi-layer structure as shown in Figures 8-11. Furthermore, the ink layer (54, basis for the ink dots) is applied on the surface layer (23) which constitutes the multi-layer structure, upon the substrate (22), (please see Figures 1 and 8-11).

**Claim 15 further** includes a product-by-process limitation concerning the *method* of forming the “multi-layer holographic pixels”. However this limitation is not given any patentable weight for it does not differentiate the product from the prior art, (please see MPEP 2173.05(p)). Furthermore, it is not clear how does this “a multi-layer image forming material” relate to the multi-layer holographic pixels, such feature therefore cannot be examined.

8. **Claims 1-6, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Waitts (PN. 5,834,096) in view of the patent issued to Rice.**

**Waitts** teaches a *card* (10) serves as the *multi-layer material* that is comprised of an *embossable* layer (32, Figures 1-3) and a *base support* (26, Figures 2-3) serves as the *substrate*, (please see column 3, lines 58-62). The embossable layer has a *microtextured* surface (34, Figures 2-3 and column 3, lines 63-64), and the microtexture represents the interference fringe of *reflection hologram*, that exhibits 2D or 3D

Art Unit: 2872

effects (please see column 3, line 65 to column 4, line 4 and column 5, lines 12-14) which therefore provides *diffraction grating pattern* (16, please see Figures 1-3, column 3, lines 26-30), in the card or the multi-layer material. Waitts teaches that the *diffraction grating pattern* (16) can provide 3D holographic indicia with different 3D effects (18, 20 and 23, Figure 1). As shown in Figure 1, the different holographic indicia (18, 20 and 23) are reproduced at *different viewing angles or positions*, it therefore implies that there are more than one different diffraction grating patterns or holograms (one for each different holographic indicia, based on fundamental theory of the hologram, also see column 3, lines 24-26 the **plural** form of the “holograms”) and *each* of the diffraction grating patterns reproduces the corresponding holographic indicia would diffract incoming light at a *predetermined* and *different* diffraction/reflection angles. Although this reference does not teach explicitly that the embossing layer comprises a *plurality panels*, one certainly can identify each different diffraction grating pattern for reproducing the different holographic indicia (18, 20 and 23) be contained within a different panel. The card or the multi-layer material having more than one different holographic indicia therefore implicitly comprises more than one panels, (please see column 3, lines 11-65).

Waitts further teaches that the embossable layer can be *tinted*, (please see column 5, lines 1-6). This reference however does not teach explicitly that the tint color is one of the yellow-magenta-cyan-black color. **Rice** in the same field of endeavor teaches printing method for making color image wherein different color pigments including yellow-magenta-cyan-black colors can be used to create different color effect., (please see column 1, lines 58-62, column 5, lines 30-40). Rice further teaches that different color ink can be applied to different ink dots (55, Figure 7) having diffraction grating (56) embossed upon. It would then have been obvious to one skilled in the art to select one of the yellow-magenta-cyan-black color as the tint color to tint different holograms or diffraction patterns (therefore different panels) for the benefit of creating the desired decorative effects.

Art Unit: 2872

With regard to the feature concerning the individual panels being holographically and optically variably configured, Waitts teaches that the diffraction grating pattern comprises embossed reflection holograms that reproduce *different* 3D holographic images or indicia (18 and 20) that are viewable at *different angle* and *different viewing positions*, (please see Figure 1 and column 3, lines 24-30), this means that the different holograms for reproducing the different holographic images are in different panels and are *holographically* and *optically variably* configured.

With regard to claim 4, Waitts teaches that the multi-layer material further comprises a *heated pressed plate* (38, Figure 3) serves as the *thermally stable layer*, a *scuff coat* (36) serves as the *wear resistant layer or top coat*, a *reflective layer* (30) overlaid the embossed layer (32) and *adhesive layer* (28) that serves to attach the material to a *substrate* (26, Figure 3, column 4). Although this reference does not identify explicitly that the adhesive is heat activated however heat activated adhesive such as epoxy resin is very well known and well used in the art such modification would have been obvious to one skilled in the art for the benefit of using common adhesive to achieve the adherence purpose with less cost and good adhesive quality.

With regard to amended claim 5, one can certainly arbitrarily assign a number to different angles of diffraction for the panels.

The same reasons for rejections are applied to claim 11.

### ***Response to Arguments***

9. Applicant's arguments filed on November 18, 2005 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

10. In response to applicant's arguments which states that the cited Rice reference does not teach "a multi-layer material *tinted embossed layer*" as recited in claims 1 and 11, which therefore differs from the

Art Unit: 2872

instant application, the examiner respectfully disagrees since the feature the applicant relied upon is NOT recited in the claims and therefore cannot be used to overcome the rejection. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The applicant is also respectfully noted that Rice teaches that the diffraction grating in the embossed layer is formed on the ink printed stock. The ink (54) certainly would tint the diffraction grating layer by contact and by appearance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***Audrey Y. Chang, Ph.D.***

***/Audrey Y. Chang/  
Primary Examiner, Art Unit 2872***